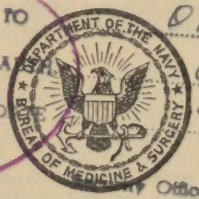
MILITARY MALARIA CONTROL IN THE FIELD



MALARIA TRAINING MANUAL NO. 2

NAVMED 142

(ALL OFFICERS)

Prepared by Training and Educational Division
Malaria and Epidemic Disease Control
South Pacific Area

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MILITARY MALARIA CONTROL IN THE FIELD

1. MILITARY IMPORTANCE OF MALARIA.

Malaria contributed greatly to the unhappy termination of the courageous defense of Bataan. It is estimated that 85 per cent of our forces there became infected with malaria.

In the South Pacific, among units which have had the most combat, over five times as many casualties have been due to malaria as have been caused by all battle casualties. After these units had been sent to a rear base and taken off suppressive atabrine, malaria again caused five to ten times the number of hospital cases as occurred from combat. Whole divisions have thus been rendered less effective by the number of men down with malaria.

These early malaria rates followed from the urgency of the situation. It was necessary to invade Guadalcanal before the newly-developed repellents and freon-pyrethrum sprays were available, when the supply of quinine was short, and atabrine a relatively unknown drug. We all had too little knowledge of the danger of malaria, and how to cope with it. Now we are better prepared to reduce the malaria hazard; it need no longer jeopardize the success of a military campaign.

2. MALARIA CAN BE EFFECTIVELY CONTROLLED ONLY BY THE JOINT EFFORTS OF EVERY OFFICER AND MAN.

It is urgent to emphasize this point. We now have large mosquito control projects that have reduced the malaria rates in occupied areas. But under conditions of active combat, in jungle warfare, there are no mosquito control programs. Malaria prevention then becomes a matter of how well each officer knows what he can do to protect his men from infected mosquitoes, and how well each man uses his clothes, his repellent, and his spray to stop mosquito bites. This is all summed up in two words, **MALARIA DISCIPLINE.**

3. GENERAL INFORMATION ABOUT MALARIA.

a. Geographical distribution.

There is at present no malaria in New Caledonia, New Zealand, or the Fiji Islands. There is a great amount of malaria north and west of these islands. There is malaria in the New Hebrides; there is more in the Solomons. It is present in Northern Australia and throughout New Guinea and the islands of the East Indies.

b. Variations due to season, control efforts, and base development.

Malaria is more prevalent during the rainy season which, in general, extends from November to May. The increased rainfall during this period creates new pools of water where malaria mosquitoes breed.

The amount of mosquito control work which has been accomplished is another factor in the malariousness of an island base. Thus, on entering a new island, under combat conditions, little or no permanent control is possible and reliance must be placed on individual protective measures, as repellents, sprays, bed nets, and the use of atabrine. Gradually as the base becomes well-established, better and more permanent malaria control measures destroy more and more infected mosquitoes until so few remain that many of the individual protective measures are no longer essential.

c. Man-made malaria, a serious problem.

It is estimated that during the rainy season on Guadalcanal, over fifty per cent of the malaria mosquito breeding took place in man-made pools of standing water. These pools of standing water were made by:

(1) Unnecessary ruts, formed by driving jeeps and trucks across country and through coconut groves. This was made worse by using a trail or road until it became badly rutted and full of holes, then abandoning it, and making another path or trail alongside the first.

(2) Building roads without providing culverts for small streams, thus blocking them, and making small pools; or placing culverts so high that they did not drain well.

(3) Digging numerous small borrow pits alongside roads.

(4) Abandoned fox holes and bomb craters which filled with water and became prolific sources of mosquito breeding.

d. Special problems in occupying new islands.

Warning should be given of the false security which too often follows a dry season landing. Troops expect mosquitoes and malaria, and finding none, conclude that talk about malaria has been overdone. Thus, the first troops on Guadalcanal in August 1942 found few mosquitoes and had little malaria in the first weeks. Meanwhile, a few malaria mosquitoes were laying countless thousands of eggs in water which collected in the myriad of ruts and holes made by the occupying force (man-made malaria). With little warning, malaria cases appeared in September and the disease became epidemic in late October.

More recently, a similar situation occurred during the New Georgia operations where every man had been given a bottle of repellent and other antimosquito equipment. No mosquitoes were found and men began to discard their repellent. Meanwhile, increasing numbers of mosquito larvae were found in water, in ruts and holes, a warning of malaria to come. Would these same troops have thrown away their guns and ammunition if they had not met the enemy during the first few days?

e. Conclusion.

The malariousness of any island is variable. The only general rule is that every officer and man should know all the measures useful in preventing malaria—and in any one situation should employ those which are applicable. The permanently based malaria control unit should be consulted in this regard.

4. NATURE OF MALARIA, AND HOW IT IS TRANSMITTED.

a. Three factors must be present at one time and place if malaria is to be prevalent among troops:

Persons infected with malaria. (Natives or malaria-infected troops).
Malaria carrying mosquitoes. (Anophelines).
Non-infected troops.

The chain of transmission from infected persons to mosquito to healthy troops is described below.

b. Malaria is a disease caused by a tiny parasite which is found in man's red blood cells. The disease is transmitted by malaria mosquitoes called "anophelines." Other kinds of mosquitoes do not carry malaria and are commonly called "pest mosquitoes." Even the anopheline, or malaria mosquito, must first become infected before it can spread the disease. To do this, the mosquito bites a person who has malaria and sucks up some blood containing parasites. The parasites multiply in the mosquito for about ten days and then wait in the salivary glands for a chance to infect a well man. Every time the mosquito drills a hole in a man's skin for blood, it drools saliva into the opening, and if malaria parasites are in the saliva, they go into the hole and so into the man's blood. Here they enter a red blood cell and multiply until they finally fill the blood cell and burst out, destroying this red cell. They then invade other cells and repeat the process.

c. Symptoms and diagnosis.

A man should suspect malaria when he has a chill followed by fever and sweating. The symptoms of malaria may be anything from headache to delirious fever or even sudden unconsciousness. The only way to be certain that one has malaria is to find malaria parasites in a blood film examined with a microscope. Sometimes, medical officers can recognize malaria from symptoms alone, without examining the blood.

d. Treatment and relapse.

Atabrine, quinine, or other drugs are used in the treatment of malaria. When given properly, the drugs will usually cure the attack in about a week. But sometimes even though a man feels well after treatment, the drugs have not destroyed all the malaria parasites. A few of them may hide away in the internal organs. Then, after ten days, or a month, or longer, the disease appears again. This is called a relapse. There may be several such relapses which have to be treated each time like a new infection.

e. Malaria is a serious disease.

It destroys a man's blood and makes him weak. In combat it may cost his life. At any time it may keep him in the hospital for ten days or longer. It may make him a chronic invalid for a year. It may kill one or two out of every hundred persons who catch it, if they are not properly treated.

5. MALARIA PREVENTIVE MEASURES WHICH ARE PRIMARILY COMMAND FUNCTIONS.

Although permanent base malaria control units have been established on each malarious island to plan and execute antimalarial measures for the benefit of all forces, the responsibility for malaria control within each military unit rests with the unit commander. To meet properly this responsibility, the following should be accomplished:

a. The establishment of organized control of the disease within military units of all forces.

The personnel which comprises this organization is essentially a medical officer with specific duties and responsibilities in connection with malaria control, and organized, trained squads of men prepared to carry on mosquito elimination. Their duties are given in Appendix I. This organization will contact and maintain liaison with the permanently based malaria control units for assistance in planning and executing their programs, but should be prepared to function independently, particularly when occupying a new island. It is reiterated that in jungle combat and in the early stages of occupying and developing new bases, the success of malaria prevention will depend upon how well this organization does its work. If it is felt that personnel cannot be spared for antimalaria work, it should be remembered that the early work of a few hundred men in malaria control duties may well prevent the wastage of thousands of man-hours during subsequent months.

b. A training program in malaria control for all officers and men.

The details of this program are outlined in Appendix II. Training preferably should be initiated in rear areas; but in many instances must be done after arrival at a malarious base. Both by word and example every officer should seek to impress his men with the importance of individual protective measures.

c. Supplies and equipment.

An adequate supply of antimalarial drugs and equipment should be procured. (Appendix III and IV). When possible, these should be forwarded in divided shipments so that the loss of one shipment will not disrupt the program.

It should be the responsibility of unit commanders that each man is supplied with a bed net in good condition; and that on going into a malarious combat area, each man has a bottle of repellent and each squad a freon-pyrethrum dispenser. It should

be his responsibility, too, that during front line combat these supplies reach the front lines with the same regularity as ammunition and food.

d. Command and responsibilities during the phase of seaborne troop movements.

(1) Temporary landings of only a few days on malarious bases may result in large numbers of men contracting malaria. If it should be necessary to land in order that troops be exercised, this should be accomplished during daylight hours; and troops should be back aboard ship by sunset.

(2) When it is known that troops will land and camp on a malarious island, an officer preferably should be sent ahead to select, with the aid of the island malaria control unit, a relatively healthy (non-malarious) campsite.

(3) All landing movements should be so planned, the military situation permitting, that troops go ashore in the morning with sufficient time to set up camp and permit men to be under mosquito nets by night time. This requires that nets, repellents, and other antimalarial supplies be available on the first night ashore.

e. Selection of healthy campsites.

(1) Campsites must be selected with great care in malarious localities. It has been directed that the advice of the base malaria control officers be obtained. If no malaria control officer is available the advice of a medical officer or engineer with some experience in mosquito control work should be sought. No set rules can be laid down. In general, camps should be located a mile or more from native villages, and marshes or streams which are known or suspected to be breeding places for mosquitoes. This holds even if the alternative is to transport water over increased distances.

f. Segregation of natives.

(1) Over 50 per cent of natives on malarious islands in the South Pacific have chronic malaria, and are a serious source of infection. Preferably, they should never be allowed in troop areas. In practice, natives are often essential as laborers. When so employed they should be allowed in camp areas only between the hours of 0600 and 1800. If they are allowed in or near camp at night when malaria mosquitoes are feeding, the mosquitoes will become infected and will, in turn, transmit the disease to troops. Native camps should be "Out of Bounds," or "Off Limits."

g. Night exercises and landing drills.

Night maneuvers, or landing drills, should be held in selected, relatively malaria-free regions. The permanently based malaria control units will designate suitable areas for tactical operations and will also mark out sectors which should be out of bounds. Even when engaged in night exercises which are held in authorized sectors, all antimosquito precautions should be rigorously enforced, both for protection and as a training measure.

h. Night working parties in malarious areas.

Night working parties in highly malarious regions should be employed only when essential. They should wear their shirts, use repellents, and take other protective measures just as if in combat.

i. Screening.

Screening is an important protective measure whenever its use is feasible. Men living inside screened tents and sleeping under bed nets have double protection. The specifications and use of screening is detailed in Appendix III.

Screening of hospital tents is particularly important. An unscreened hospital, filled with malaria patients, is a source where great numbers of mosquitoes may infect themselves and later transmit the disease to well men. Next in order of priority, mess halls, latrines, and living quarters should be screened.

j. Atabrine suppressive therapy.

The unit commander is responsible for the program of suppressive therapy with atabrine.

Although there is no known drug which will prevent malaria infection, one drug, atabrine, will, in most cases, when given properly, **delay the onset of symptoms of the disease as long as it is being taken.** This drug is, therefore, of vital importance in keeping men on their feet during urgent military operations. However, atabrine is not always successful in suppressing symptoms. Thus, even when the drug is taken regularly, a small percentage of troops in combat in a malarious area will develop symptoms of malaria each week; but without atabrine, an overwhelming number of men are likely to be rendered ineffective by the disease.

When atabrine fails to protect, one or more of the following factors is usually responsible:

Not taking it regularly as prescribed.
Unusual fatigue, or lack of sleep.

When the military operations are complete and the men return to a rear base, the atabrine doses are stopped. During the next few weeks, in a man bitten by infected mosquitoes, chills and fever will appear and treatment can be given in a hospital. Since the best hospital facilities for treating malaria are located in the rear areas, this postponing malaria until men are back in such areas assures better medical care.

Dosage, when to start, and when to discontinue atabrine, is fully discussed in Sect. VI; IX,D; and X,B,2, of Malaria Training Manual No. 1, "Prevention of Malaria in Military and Naval Forces in the South Pacific," available to all medical officers.

Supervision: If conditions are urgent enough to necessitate atabrine suppressive therapy, it is equally urgent that a proper system of supervision of the taking of the drug be required as follows:

That the drug be given by roster to both officers and men.
That a competent non-commissioned officer witness the actual swallowing of the drug by each individual.

That by checking the roster regularly, all individuals who have not taken the drug be required to report and take sufficient dosage to equal that missed.

That failure to take atabrine as ordered should result in disciplinary action.

In the recommended dosage atabrine is completely harmless. In a very few men, atabrine may cause vomiting. This usually disappears after the first few days. It can be lessened by taking the tablet on a full stomach. Less than one in two hundred persons is intolerant of atabrine. For such a person the medical officer may prescribe quinine. Here it should be noted that atabrine gives better suppressive action than quinine and has fewer toxic effects. A temporary yellowing of the skin may occur since atabrine is a yellow dye. This will disappear after the drug is stopped and is not dangerous.

6. INDIVIDUAL PROTECTIVE MEASURES AGAINST MOSQUITO BITES.

In the following paragraphs, the measures which each soldier, sailor, or marine may take to protect himself are described.

a. Ordinary clothing used for protection.

Mosquitoes will not bite through ordinary clothing unless it is thin or tightly stretched. Beginning at sundown, shirts should be worn, collars closed and sleeves rolled down. In addition, wherever mosquitoes are present, the bottoms of trousers will be tucked into tops of shoes and socks will be drawn up around trouser bottoms to protect ankles. Head nets and gloves will be used where these are feasible.

b. Repellents.

Repellents are chemical solutions which, when spread over the skin, will keep mosquitoes from biting for about three hours. At sunset and every three hours when exposed at night, rub six to eight drops of standard mosquito repellent on hands, wrists, cheeks, and neck. When men are sweating, the repellent must be applied more often. Also, apply a few drops where clothes are tight, as across shoulders and the seat of trousers. When troops are turned out of bed by night alarms, repellent should be taken to fox holes. It should be kept close at hand for this purpose by placing it in steel helmet before retiring.

It is important to emphasize that there may be times, particularly in combat, when repellents are the best protection against malaria. **If repellents are used regularly and well, a man may go through the most malarious jungle and have better than a fair chance to avoid the disease.**

c. Spray killing of adult mosquitoes.

A new sprayer known as a freon-pyrethrum aerosol dispenser is available. No spray gun is necessary as the freon produces the necessary spraying pressure and the pyrethrum is left suspended in the air as a cloud of fine droplets. This mist per-

sists for some time and will protect small groups of men in fox holes, gun positions, jungle shelters, and other front line situations. This spray is highly concentrated. Eight seconds' spraying is enough for a pyramidal tent; smaller tents and bed nets require smaller amounts. Larger amounts do not increase effectiveness and are wasteful.

In rear areas the hand sprayer will also be useful. Tents and nets should be sprayed at dusk and before going to bed. If bombing forces men to leave their nets, a supply of spray should be taken to the fox hole. Hospitals with malaria patients should be sprayed regularly, as should mess halls and kitchens. The repellent activity of the Aerosol is of such low value that its use as a spray for clothing is unwarranted and wasteful.

d. Bed nets.

Bed nets are one of the most valuable methods of protection from mosquito bites. There are places in the tropics where a single night of exposure to mosquito bites may result in an infection rate up to 20 percent among unprotected troops. It is the responsibility of each officer and man to see that these nets are available on the first night ashore. They should be regularly inspected and repaired. Replacements will be available. Officers should see to it that each man practices setting up his net properly before entering a malarious area. It should be so supported that it does not sag upon the sleeping man; and so arranged that his elbows and knees do not contact the meshes. In practice, such contacts are difficult to prevent. The man who uses repellent on the knees and elbows, when retiring, is well repaid. Nets should be ready before dusk. After getting inside, tuck in the net carefully. Before going to sleep one should search for mosquitoes (with a flashlight, if possible), and kill them.

e. Avoidance of unnecessary exposure to infected mosquitoes.

Troops should not be allowed to go swimming or fishing after sundown, or to take showers, or otherwise unnecessarily expose themselves. In order to avoid early morning exposures in highly malarious areas, it may be feasible to postpone reveille until after sunrise.

7. APPLICABILITY OF INDIVIDUAL PROTECTIVE MEASURES.

The need for the measures that have just been described will vary. Malaria-carrying mosquitoes attack men between sundown and sunrise and thus it is between these hours that it is most important that precautions be taken. Under combat conditions, in a malarious region, individual protection against mosquito bites is the most important and often the only way to prevent the disease. However, particularly during the dry season, combat may occur in an area which is temporarily

mosquito free and the measures detailed above, while unnecessary at the moment, must be rigidly applied if the situation changes. As a base becomes well-developed and good malaria control is established, those protective measures which were at first of great importance may become superfluous.

With these varying possibilities in mind, the command responsibility is first to ensure that every man learns how to protect himself from malaria; secondly, to find out from the local malaria control unit which of these measures are applicable in the area where the unit is currently operating. Finally, it should be made a matter of severe disciplinary action if an individual fails to comply with the prescribed measures.

The organization outlined in Appendix I, and the Training Program of Appendix II are required in all forces by ComSoPac serial No. 01619, dated 13 September 1943.

APPENDIX I

ORGANIZATION FOR MALARIA CONTROL WITHIN VARIOUS MILITARY UNITS OF ALL FORCES.

1. Although permanently based malaria control units have been established on each malarious base to carry on anti-malarial measures applicable to all forces in the area, the responsibility for malaria control within each organization rests with the unit commanders. In order that this responsibility may be properly met, the following will be accomplished:

a. APPOINTMENT OF UNIT MALARIA CONTROL OFFICERS.

All Army, Navy, and Marine units in a malarious area, or anticipating duty in such an area, will designate a medical officer to be responsible for malaria control within the organization. In units the size of a battalion or regiment, the duties of this officer will be part-time. In larger units, such as a division, a full-time malaria control officer may be appointed to supervise and coordinate the work of malaria control officers in subordinate units.

b. DUTIES OF MALARIA CONTROL OFFICERS.

It will be the duty of the unit malaria control officer to formulate an anti-malarial program for the approval of his commanding officer; and to see to its execution both prior to entering and after arrival in a malarious area. The program will include:

(1) Instruction and training of all personnel in anti-malarial measures, as outlined in Appendix II.

(2) Procurement, care, and distribution of all anti-malarial supplies and equipment.

(3) Organization, training and supervision of mosquito control squads. (See par. 2, below).

(4) Prior to entering malarious areas, or moving from one such area to another, this officer will provide his commanding

officer with an estimate of the malaria situation to be encountered. This will include problems to be anticipated during the phase of seaborne troop movements.

(5) Upon arrival at any island base, he will immediately contact and maintain liaison with the permanent base malaria control unit to determine the extent to which the various anti-malarial measures need be employed. He will recommend specific directives applicable to the situation. He will make inspections to determine the efficiency with which these measures are being carried out and report thereon.

(6) For combat operations, a special plan will be formulated to ensure the application of all possible individual protective measures, and the forwarding of adequate anti-malarial supplies to the front lines.

(7) He will render to his commanding officer a monthly report, prior to the sixth day, on the activities of the malaria control unit, with a copy to the permanently based malaria control unit, covering the following:

(a) Supplies of anti-malarial drugs and equipment.
(b) Malaria training program.
(c) State of malaria discipline.
(d) Oiling, draining and other anti-mosquito work.
(e) Statistics on cases of malaria in the unit.

2. MOSQUITO CONTROL SQUADS.

A squad for mosquito control will be established in each unit the size of a battalion. Smaller units will establish a similar organization adapted to their needs. As the work of these squads is technical, men of some education should be selected. It is particularly important that the non-commissioned officer should be both energetic and intelligent.

a. The personnel of the mosquito control squad will be:

(1) Two non-commissioned or petty officers in charge.

(2) Additional enlisted personnel on the basis of five or more per 1000 strength. These men should be so selected that if the battalion is dispersed as separate units, there will be one man in each group qualified to carry on mosquito control operations. These men will form the trained nucleus.

(3) Additional working parties as may be required for effective mosquito control will be assigned to aid these squads.

b. It will be the primary duty of these squads to maintain mosquito control within the camp and in an adjacent area within one half mile from the camp. Where overlapping occurs between units, the malaria control officers of these units will jointly decide on the area to be controlled by each group. Each mosquito control squad will:

(1) Prepare a map showing all water collections, and places of mosquito breeding in the area to be covered. In the preparation of this map they will be aided by technicians from the permanent base malaria control unit.

(2) With this map as a guide, the following types of mosquito control work will be carried on:

(a) Oiling.

(b) Clearing of stream banks and the edges of ponds and lagoons.

(c) Emptying and removing artifical containers of water which are or may become breeding places.

(d) Ditching and filling to remove standing water.

3. MALARIA CONTROL INSPECTOR.

a. An officer, or senior non-commissioned or petty officer, will be appointed as an assistant to the malaria control officer and be known as the malaria control inspector. He will inspect all areas occupied by his organization at least once a week, and report his findings in writing to the malaria control officer. The scope of his activities will include:

(1) Night inspections to check on men not using bed nets, or using them improperly. At other times, he will inspect nets for state of repair.

(2) Spot checking of individual possession and use of repellents.

(3) Spot checking of the supply and use of insecticide sprays.

(4) Inspections, especially during the "biting hours," to note failure to use shirts and other clothing properly. The inspections should particularly include night working parties and sentries.

(5) A check on the effectiveness of atabrine administration, when suppressive treatment has been ordered.

(6) A check on the effectiveness of mosquito control as determined by the presence of mosquito larvae.

(7) A report on man-made malaria as evidenced by the presence of water in ruts, fox holes, and other places.

(8) Inspection of troops in front lines to ascertain that their anti-malarial supplies are adequate and that all individual protective measures are used.

4. No duties that conflict with primary duties will be assigned to the personnel of these mosquito control squads or to the malaria control inspector.

5. Commanding Officers of units will promulgate such orders and take such steps as are necessary to insure the enforcement of all measures of personal protection against contracting malaria.

APPENDIX II

TRAINING PROGRAM IN MALARIA CONTROL

1. Unit commanders will allot in the training schedules sufficient time for the proper instruction of their troops in the principles of malaria prevention.

2. Lectures will be given to small groups of men by their respective medical officers. These lectures will cover the following:

a. Military Importance of Malaria.
b. Nature of Malaria, How Transmitted and Effects.
c. Individual Protective Measures, Conditions in Which Each is Applicable, Especially under Combat.
   Repellents.
   Use of Ordinary Clothes for Protection.
   Spray-killing of Adult Mosquitoes.
   Bed Nets.
   Atabrine Suppressive Therapy.
   Avoidance of Unnecessary Exposure.
d. Control of Mosquito Breeding.
e. Man-made Malaria—How to Avoid It.

3. All personnel will be given initial instruction in prevention of malaria, by lectures and motion pictures as soon as practicable. Subsequently a review of the subject will be carried out at least once a month.

4. Additional instruction will be given to officers and non-commissioned officers, or petty officers, covering especially the selection of camp sites, the hazard of natives as a source of malaria, and the enforcement of precautions under varying field conditions. Emphasis will be put on the responsibility of officers and non-commissioned officers for good "Malaria Discipline" and its importance to military success. Arrangements may be made to have members of Base Malaria Control Units assist in this program.

5. To aid in this program permanently based Malaria Control Units (or Island Surgeons) will issue the following malaria training manuals:

All Medical Officers:	MTM No. 1	**Prevention of Malaria in Military and Naval Forces, SPA.**
All Line Officers :	MTM No. 2	**Military Malaria Control in the Field.**
Enlisted Men :	MTM No. 3	**Malaria, Mosquitoes, and Men.**

Movies, additional literature, posters, and other material will also be made available by Malaria Control Units.

6. Every unit will periodically conduct field exercises in the practical application of anti-malarial measures. On maneuvers these measures will be standard procedures.

7. Each unit will arrange with the permanent Base Malaria Control Unit to hold a school for those officers and non-commissioned officers who are designated for malaria and mosquito control work. In planning these schools, precedence will be given those units anticipating movement to forward areas. The following subjects will be taught.

a. Identification of anopheline larvae and adult mosquitoes.
b. Use of maps to mark breeding places.

c. Control of mosquito breeding by draining, filling, spraying with oil, and use of drip oilers.
d. Assembly and repair of knapsack oil sprayers.

8. Units with facilities for microscopic diagnosis will arrange with the Base Malaria Control Unit for training of personnel in thick blood smears.

APPENDIX III

The following anti-malarial supplies per 1000 men per month (30 days) are authorized. Preparatory to entering a malarious area, a ninety (90) day supply should be obtained. Every effort should be made to secure the items listed on the following pages before leaving rear bases for advance areas. These supplies should always be shipped in **divided lots so that the loss of any one shipment will not disrupt the program.**

ANTI-MALARIAL DRUGS

All Forces Requisition from Army or Navy Med. Supply Depots

Item No.	Article	Unit	Supply per 1000 men/mo.	Remarks
10845K	Atabrine tablets, 100 mgm.	100	400 Units	Note 1
13890X	Quinine Dihydrochloride, USP, 5 gr. amp.	Doz	1½ Units	
13910X	Quinine Sulphate Tablets 5 gr.	1000	5 Units	
1K07502	Atabrine Dihydrochloride pwd. 0.2 gm.amp. W/10 cc size amp. sterile distilled water	5	4 Units	

All Forces Requisition from Army Quartermaster

Item No.	Article	Unit	Supply per 1000 men/mo.	Remarks
27-B-348	Bars, Mosquito (Red nets)	Ea.	150	Note 5
27-H-189	Headnets, Mosquito	"	150	
51-I-159	Insecticides, Freon-aerosol, 1 lb. dispenser	"	300	
51-I-165	Insecticide, liquid, Finished spray	Gal.		Note 2
41-S-4110	Sprayer, liquid, insect, pump type (only if liquid insecticide is supplied)	Ea.	20	
41-S-4106	Sprayer, liquid, insect, continuous spray (only if liquid insecticide is supplied)	"	3	
51-R-265	Repellent, insect (2 oz. btl.)	Btl.	1000	Note 3

MOSQUITO LARVICIDES

All Forces requisition from Army Quartermaster or Service Command:

Engineer Corps Items

Item No.	Article	Unit	Supply per 1000 men/mo.	Remarks
41-7839.7-7	Paris green, standard larvicide	Lb.	40	
	Diesel oil, No. 2 (or equal)	Gal.	120	
41-3115.5-10	Paris green, duster, hand rotary type	Ea.	3	Note 4
	Paris green, duster, hand rotary type, spare parts	Set	3	Note 4
41-7839.5-5	Oil sprayers, knapsack type, Bordeaux nozzle	Ea.	10	Note 4
	Oil sprayers, knapsack type, spare parts	Set	10	Note 4
	Gasket material for sprayers, neophrene sheet, 12″x24″	Sheet	1	Note 4
40-9030.6-3	Sprayer, insect, portable, gasoline, engine driven for larvicide with four 50′ lengths of ⅜ inch oil resistant hose and spray nozzle	Set	½	Note 4
	Spare parts for above	Set	½	Note 4

Screening

Each Force Requisition from Own Supply Facilities:

Allowances for screening are not available. The following recommendations are based on plans to screen nearly all tents. Enough to screen field hospitals, containing malaria patients, should come ashore with hospital units, to be followed as soon as possible with screening for mess halls, kitchens, offices, latrines, and later all tents, in that order of priority. Cloth bobbinette is preferred to wire for field use. Wire or plastic screening is preferred whenever wooden mess halls, or other stable semi-permanent buildings are to be screened.

Engineer Corps Items (Cont.)

Item No.	Article	Unit	Supply per 1000 men/mo.	Remarks
	Screening, cloth - bobbinette, 18-10 mesh, bar 3 ft. wide..	Ft.	10,000 Linear ft.	Note 4
	Screening, cloth - bobbinette, 18-20 mesh bar 3 ft. wide....	Ft.	2,000 Linear ft.	Note 5
	Screen, wire, heavy grade, 16 meshes to in.....			Note 6
	Screen, standard grade, 18 meshes to in.....			Note 6
	Saran-plastic screening (Dow Chemical Co.)			Note 6

Note 1—Suppressive and Therapeutic Needs.

Note 2—May be issued in lieu of insecticide, freon-aerosol, basis 1 gal. insecticide equals 1 insecticide freon-aerosol (1 lb dispenser).

Note 3—Should have double this in combat.

Note 4—Initial supply only.

Note 5—Replacements per 1000 men per month.

Note 6—May be issued in lieu of cloth when use of permanent buildings is anticipated. Replacement rate should be half that of cloth screening.

APPENDIX IV

SUPPLIES FOR MOSQUITO CONTROL SQUADS

There is no T/BA for these squads, as of September, 1943. On the basis of one squad serving 1,000 men the following equipment should be available to each squad from the T/BA equipment of the unit. Items not included in Unit T/BA's should be requisitioned as indicated below (Initial issue).

Motor Transport Equipment

The motor vehicle noted below is for full time use in bivouac area to haul oil and other supplies, labor details, etc. Where two or three battalions are in one area of limited extent, they may use one truck jointly.

Items No.	Article	Unit	Per 1000 Men	Remarks
	½-¾ ton, 4 wheel drive, weapons carrier	Ea.	1	

Engineer Equipment

	Compass, lensatic	Ea.	1	
	Machetes, w/scabbard	Ea.	8	
	Paper, overlay or tracing, for maps	Roll	1	

Quartermaster Equipment

	Axe, single bit, w/handle	Ea.	3	
	Brush hook, w/handle	"	2	
	Hammer, carpenter claw, ball faced, 1 lb	"	2	
	Note book, field	"	6	
	Mattocks, w/handles	"	5	
	Saw, cross cut, type L, 2 nose, 6 ft.	"	1	
	Scythe, brush, w/handle	"	2	
	Shovel, D - handles, square point No. 2	"	3	
	Shovel, long handle, round point	"	3	
	Shovel, long handle, square point	"	3	
	Soldering outfit	Set	1	
	Stone, carborundum	Ea.	1	
	Boots, rubber, hip, sizes 7-11	Pr.	6	
	Boots, rubber, knee, sizes 7-11	"	6	
	Funnels, w/1" aperture, lower	Ea.	3	
	Forks, Potato	"	3	

Signal Equipment

	Flashlight, TL-122-A	Ea.	7	

Medical Supplies—Class 7

72630	Dipper, 1 pt., white enamel	Ea.	3	
75155	Book, memorandum	"	12	
75160	Book, blank, ledger	"	1	
76240	Pencil	Doz.	2	
76250	Pencil, blue	Ea.	6	
76260	Pecil, drafting 6H	"	6	
76280	Pencil, red	"	2	
76390	Ruler, 12"	"	2	

Ordnance Equipment

	Files, flat, mill, bastard, 12"	Ea.	2	
	Spigots, for 55 gal. oil drums	"	4	

ABSTRACTS OF SOME OF THE MORE IMPORTANT PROVISIONS OF DIRECTIVES CONCERNING MALARIA IN THE SOUTH PACIFIC

I. Organizations.

Malaria control units will advise and render service in connection with malaria control to all forces, Army, Navy, Marines, and Allies, occupying malaria infested islands.

All Malaria Control Units in the South Pacific Area and all matters pertaining to malaria control are under the direction of an officer attached to the staff of the Commander, South Pacific. This officer is directly responsible to the Commander, South Pacific, in all matters pertaining to malaria control.

II. Command Responsibilities.

Commanders of all bases in which Malaria Control Units are established are enjoined to cooperate to the fullest extent in order that the Malaria Control Units may accomplish their extremely important mission.

It is directed that officers in charge of Malaria Control Units be consulted in connection with selection of sites of camps and airfields and that their recommendations in such matters be given due consideration.

Information concerning any contemplated troop movement of any force, coming to or leaving a malarious base, will be made known by the island or force commander to the senior malaria control officer at each base concerned as early as such information is received.

Commanding officers of each organization will be responsible for carrying on antimosquito measures within and adjacent to their own camps. **Note:** The above abstracts are from directives issued by ComSoPac (serial 0094B, 13 November 1942 and serial 00169E, 29 December 1942) and by Headquarters, USAFISPA (29 November 1942 and 24 May 1943).

III. Prevention of Disseminaton of Anopheline Mosquitoes.

A. Aircraft. Direct responsibility for preventing dissemination of malarial mosquitoes by aircraft is placed on the commanding officer of each airport in the South Pacific area.

The spraying of individual planes will be the responsibility of the pilot of each plane and a record that spraying has been carried out will be included on one of the regular inspection forms. (ComSoPac serial 0174, 7 February 1943).

Planes leaving malarious islands for nonmalarious bases, will be sprayed as follows:

(1) **Immediately before departing,** all enclosed spaces of the plane will be sprayed, using not less than eight (8) cubic centimeters of the standardized pyrethrum extract per 1000 cubic feet of enclosed space. (Spraying with freon-pyrethrum dispenser for four (4) seconds per 1000 cubic feet). **Spraying will be re-repeated immediately after landing on a non-malarious island.** (ComSoPac serial 0178, 2 September 1942).

B. Ships. After sailing from a malarious island and prior to arrival at a nonmalarious island all enclosed spaces which may harbor mosquitoes will be methodically sprayed with a standard pyrethrum insecticide utilizing at least 10 cubic centimeters per 1000 cubic feet of space. (Spraying with a freon-pyrethrum aerosol dispenser for four (4) seconds per 1000 cubic feet of space). This will be accomplished before the discharge of any cargo if the military situation permits. (ComSoPac serial 176, 17 January 1943).